

CURRENT DRUG THERAPY

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Digitalis Preparations

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TWO and one-half centuries after its discovery, digitalis is still the most useful drug in the treatment of heart failure and cardiac arrhythmias. The most important concept in its use is the recognition of the varying individual dosage requirement for initial digitalization and maintenance.

Preparations Available

Digitalis leaf.—There is no justification for prescribing the tincture of digitalis. Digitalis leaf is rather poorly absorbed; full effect is not attained until 36-72 hours and its action is prolonged, which is an advantage in maintaining digitalization but a troublesome quality in the presence of toxicity. Digitalization can be achieved in two or three days with a dose schedule of 300 mg. (4.5 grains) three times daily (t.i.d.) for the first day, followed by 100 mg. t.i.d. to the point of optimal therapeutic effect. The maintenance requirement is approximately 100 mg. per day.

Digitoxin.—Absorption from the gut is complete but the onset of therapeutic effect is slow. Prolonged toxicity is common with over-digitalization. An average plan for digitalization is 0.6 mg. initially, followed by 0.4 mg. and 0.2 mg. at intervals of six to eight hours. The daily maintenance dose is 0.1 to 0.2 mg. Tablets are available in 0.15 mg. strength and are required for maintenance more often than the large 0.2 mg. tablet. A parenteral preparation is available but other shorter-acting substances are often preferable.

Gitalin.—This substance belongs to the same group as digitoxin and digitalis leaf. Claims for a wider therapeutic range for gitalin have not been substantiated, but some patients seem to be able to tolerate therapeutic amounts of gitalin while unable to take other digitalis preparations because of signs of toxicity.

Digoxin.—In its absorption from the gut, this product is intermediate between digitalis and digitoxin (80% is absorbed). It has the advantage of rapid onset of action and shorter duration. Signs of toxicity seldom last longer than 48 hours after the drug is discontinued. The parenteral preparation can be given either intravenously or intramuscularly, the latter providing an alternative to the oral route for patients who are unable to take oral medication (as in the early postoperative state).

The oral digitalizing dose ranges from 1.5 to 4.0 mg. One may use 0.5 mg. initially, followed by 0.5 mg. in six hours and then 0.25 mg. t.i.d. to the point of complete digitalization. Because of its rapid action and excretion, the need for an initial digitalizing dose is less obvious than with the slow-acting preparations. However, the ultimate criteria of adequate dosage are the same. The maintenance dosage ranges from 0.25 to 1.0 mg. daily.

Lanatoside C.—This rapid-acting form of digitalis may best be reserved for intravenous digitalization because of its poor absorption from the gut (10%). The duration of toxicity is about the same as that of digoxin. The average maintenance dose by mouth is said to be 0.5 to 1.0 mg. daily.

Children and Infants

Digoxin is a useful preparation in infants and children. Its action is short, an advantage when toxicity is harder to recognize, and it is available as an elixir. The digitalizing dose is 0.01 mg. per lb. for three to four doses at six-hourly intervals. The maintenance requirement is 0.01 mg. per lb. of body weight or less, best given in two divided daily doses. The maximal daily requirement in children over two years seldom exceeds 0.20 to 0.25 mg.

Rapid Digitalization

The few emergency situations in which this is required may justify the intravenous use of lanatoside C (Cedilanid), digoxin or ouabain. The first two preparations produce an effect in 10 to 15 minutes which is maximal in about two hours. Ouabain is slightly more rapid in effect (five minutes). Intravenous use of these agents is hazardous in patients who have been receiving digitalis and is seldom required.

Toxicity

Anorexia and nausea may or may not occur before the onset of arrhythmias. Ventricular premature beats caused by digitalis will disappear when the dose is reduced. Atrial tachycardia with partial A-V block often responds to treatment with oral potassium chloride. Marked ventricular irritability may justify treatment with either careful use of intravenous potassium chloride (40 mEq. in 250 to 500 ml. of dextrose in water) or edathamil disodium (Endrate disodium), which chelates the serum calcium and reduces myocardial irritability.

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Depletion of potassium which sometimes results from zealous use of oral diuretics has resulted in an increasing number of patients with signs of toxicity.

Bradycardia and first-degree A-V block may occur with the administration of excessive amounts of digitalis. The older patient is sometimes particularly sensitive to digitalis and may require *very* small amounts.

Infrequent idiosyncrasies to digitalis include

trigeminal neuralgia, paresthesias, retrobulbar neuritis, gynecomastia, urticaria, thrombocytopenia and delirium.

The choice of preparation should depend on the patient's requirements and the physician's familiarity with a preparation which is consistent in quality and economical in price. A recent study in the United States showed that the price for equal lots of digitalis preparations of equal strength from different sources ranged from \$1.55 to \$13.50.

SHORT COMMUNICATION

Hospital Facilities for the Management of Acute Cardiorespiratory Failure

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GREATLY improved techniques of cardiorespiratory resuscitation have been developed in the past few years.¹⁻⁴ These techniques are most effective when personnel are fully familiar with their minutiae and when satisfactory equipment is available for their application. Conditions amenable to these methods include reversible disorders complicated by cardiac arrest, and the various causes of acute respiratory insufficiency. The purpose of this communication is to outline the provisions which have been made at the Toronto General Hospital for the management of these situations.

EQUIPMENT

Each ward and the Outpatient and Emergency Departments of the hospital have been provided with a small case (Fig. 1) containing sufficient

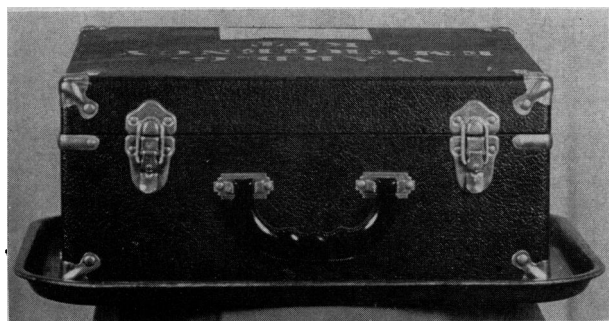


Fig. 1.—Emergency box with standard kitchen tray. Small inner compartment separates drugs and syringes from other items.

equipment to establish an airway, to provide adequate ventilation and oxygenation, and to treat many of the causative conditions responsible for

ABSTRACT

A description is given of the arrangements made in a large Canadian teaching hospital for the management of acute respiratory failure and of cardiac arrest. Each ward is provided with a case containing a selection of drugs, a bag and mask for intermittent positive pressure respiration, a laryngoscope and endotracheal tubes. In such emergencies, key personnel are called on the hospital public address system as soon as the switchboard is informed of the location of the patient concerned. A resuscitation training program for medical students, interns and nurses has been instituted.

acute cardiorespiratory failure (Fig. 2). Sufficient drugs are provided to initiate treatment but, to retain simplicity, only one ampoule or vial of most

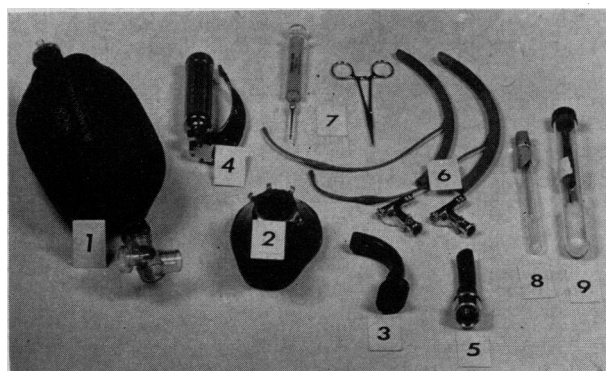


Fig. 2.—Major items of equipment included in emergency box. Numbers refer to Table I.